PATENT
Attorney Docket No. 401171/FUKAMI

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

AGA et al.

Application No.: Unknown

Filed: April 20, 2001

For: EPOXY RESIN COMPOSITION, SEMICONDUCTOR DEVICE, AND METHOD OF JUDGING VISIBILITY OF LASER MARK

Art Unit: Unknown

Examiner: Unknown

SPECIFICATION, CLAIMS AND ABSTRACT AS PRELIMINARILY AMENDED

Amendments to the paragraph beginning at page 1, line 6:

The present invention generally relates to an epoxy resin composition for sealing a semiconductor device, and more specifically to a semiconductor sealing epoxy resin composition ~~being~~ providing excellent ~~in~~ visibility of a laser mark and ~~in~~ having excellent fluidity characteristics. The present invention also relates to a semiconductor device that uses such a semiconductor sealing epoxy resin composition. The present invention further relates to a method of judging the visibility of a laser mark.

Amendments to the paragraph beginning at page 1, line 28:

However, such a marking and its curing require a lot of time, and also it is not easy to handle with the ink, so that ~~there is~~ an increasing number of manufacturers ~~that adopt~~ have adopted a laser mark 6.

Amendments to the paragraph beginning at page 2, line 3:

Further, although there ~~has~~ have been some reports on improvement in the visibility of a laser mark, they are not ~~shown in~~ reported as quantitative values, and it is not clear whether they are good or poor.

Amendments to existing claims:

1. (Amended) An epoxy resin composition that seals a semiconductor chip, wherein a color difference between a color of said epoxy resin and a color of a standard substance stored in a colorimeter ~~shows~~ has a value of at least 30 ~~or more~~.

2. (Amended) An epoxy resin composition that seals a semiconductor chip, said epoxy resin composition including an epoxy resin and a filler that fills ~~an inside of~~ said epoxy resin, wherein said filler contains from 10 to 15 wt%, with respect to total filler, of a filler component having an average particle size of no more than 10 μm ~~or less with respect to total filler components~~.

3. (Amended) A semiconductor device including:

a semiconductor chip;

a package ~~formed~~ of an epoxy resin ~~that seals~~ encapsulating said semiconductor chip; and

a laser mark printed on a surface of said package, wherein a color difference between a color of said laser mark and a color of the surface of said package where the laser mark is not ~~formed~~ present, as measured by ~~means of~~ a colorimeter, ~~shows~~ has a value of at least 10 ~~or more~~.

5. (Amended) A semiconductor device including:

a semiconductor chip;

a package ~~formed~~ of an epoxy resin ~~that seals~~ encapsulating said semiconductor chip; and

a laser mark printed on a surface of said package, wherein a color difference between a color of said epoxy resin and a color of a standard substance stored in a colorimeter ~~shows~~ has a value of at least 30 ~~or more~~.

6. (Amended) A semiconductor device including:

a semiconductor chip;

a package ~~formed~~ of an epoxy resin ~~that seals~~ encapsulating said semiconductor chip; and

a filler that fills ~~an inside of~~ said epoxy resin, wherein said filler contains from 10 to 15 wt%, with respect to total filler, of a filler component having an average particle size of no more than 10 μm ~~or less with respect to total filler components~~.

7. (Amended) A method of judging ~~a~~ visibility of a laser mark printed on a surface of a package ~~in~~ of a semiconductor device ~~sealed with~~, the package ~~formed of~~ being an epoxy resin, said method including ~~the steps of~~:

measuring a color difference value between a color of ~~said~~ the laser mark and a color of the surface of said package where the laser mark is not ~~formed~~ present, ~~by means of~~ with a colorimeter; and

judging whether ~~said~~ the color difference value ~~shows a value of~~ is at least 10 ~~or more~~.

Amendments to the abstract:

ABSTRACT OF THE DISCLOSURE

A ~~principal object is to provide a~~ semiconductor device that uses a semiconductor sealing epoxy resin composition ~~being~~ excellent in visibility ~~of a~~ for laser ~~mark~~ marking and in fluidity characteristics. A semiconductor chip is sealed with a package ~~formed~~ of an epoxy resin. A laser mark is printed on a surface of the package. The color difference between the color of the laser mark and the color of the surface of the package where the laser mark is not ~~formed~~ present, as measured by ~~means of~~ a colorimeter, ~~shows~~ has a value of at least 10 or more.